



# Focus on SILICA

## Worker Exposure Assessment and the Tools You Need

Did you know that one of **the most common OSHA citations issued based on OSHA's Silica Rule is failure to conduct worker silica exposure assessments?** The OSHA Silica Rule requires employers to assess the exposure of each employee who is, or can reasonably be expected to be, exposed to respirable crystalline silica at or above the action level of  $25 \mu\text{g}/\text{m}^3$  over an eight-hour day. Assessment options include:

- **Performance option**, based on **any combination of** air monitoring data or objective data
- **Scheduled monitoring option**, the collection of personal breathing zone samples that reflect exposures on each shift, job classification, and work area
- **Further monitoring** may be required within three months if exposures are at or above the PEL ( $50 \mu\text{g}/\text{m}^3$ ) or six months if at or above the action level but below the PEL. In addition, employers must reassess exposures when any workplace changes might result in additional exposures at or above the action level.

The Silica Rule allows exposure monitoring with any respirable dust sampler that conforms to ISO 7708/CEN criteria. SKC respirable dust samplers that meet this criteria are described in this brochure. **If your focus is on silica, stay focused on SKC for compliance air sampling tools.**

*See inside for respirable dust samplers that meet the criteria in OSHA's Final Rule on Respirable Crystalline Silica.*





## SKC Respirable Dust Cyclones

Listed in OSHA Silica Rule

SKC offers two respirable dust cyclones to meet the performance criteria in the OSHA Final Silica Rule (final rule pages 16439, 16441, and 16453). Both cyclones are designed for superior performance compared to other cyclones on the market.



**SKC Aluminum Cyclone** meets ISO 7708/CEN criteria at a flow rate of 2.5 L/min. See performance data relative to the ISO/CEN standard adopted by OSHA, ACGIH, and other international agencies in Reference 1 at bottom left.



**SKC GS-3 Cyclone** meets ISO 7708/CEN criteria at a flow rate of 2.75 L/min. See performance data relative to the ISO/CEN criteria in Reference 2 at bottom left.

### Respirable Dust Cyclone Features/Advantages

- Conductive aluminum or plastic construction eliminates electrostatic effects
- Used with an open-face 3-piece cassette for even particle deposition on the filter
- Available in 25 or 37 mm
- Aluminum Cyclone has an easy-to-use calibration adapter accessory
- GS-3 Cyclone features three inlet slits that eliminate the ambient wind speed and orientation bias found with the 10-mm nylon cyclone

### Ordering

Sampler		Cat. No.
Aluminum Cyclone with grit pot, requires a 3-piece cassette	25 mm	225-01-01
	37 mm	225-01-02
GS-3 Cyclone with bowl adapter, cassette adapter, and grit pot, requires a 3-piece cassette	25 mm	225-103
	37 mm	225-100
Sampling Media - 37 mm (see <a href="http://www.skccinc.com">www.skccinc.com</a> for 25 mm)		Cat. No.
PVC Filters, GLA-5000, 37 mm, 5.0-µm pore size, with supports	pk/100	225-5-37-P
Cassette Blanks, SureSeal certified leak-free, 37 mm, 3 pieces, clear styrene; require SureSeal Cassette Opener accessory	pk/50	225-3050LF
Preloaded PVC Filters, GLA-5000, 37 mm, 5.0-µm pore size with supports, in 3-piece clear styrene cassette, banded; require SureSeal Cassette Opener accessory	pk/50	225-803
Prewieghed PVC Filters in Cassettes, GLA-5000, 37 mm, 5.0-µm pore size filter with supports, preweighed, 5 decimal; in a 3-piece clear styrene cassette, banded	pk/10	225-8208A
	pk/50	225-8209A
Accessories		Cat. No.
Calibration Adapter for Aluminum Cyclone, 25/37 mm		225-01-03
Standard Calibration Jar for GS-3 Cyclone, 25/37mm		225-111
Filter Cassette/Cyclone Holder, 25/37 mm		225-1
SureSeal Cassette Opener, 25/37 mm		225-13-5A

Visit [www.skccinc.com](http://www.skccinc.com) for more information.

## PERFORMANCE PROFILE

### Flow Rate:

Aluminum Cyclone: 2.5 L/min

GS-3 Cyclone: 2.75 L/min

### Sampling Media:

Requires a 25 or 37-mm, 3-piece cassette loaded with 5.0-µm PVC filter

### Recommended Sampling Pumps/Calibrator:

AirChek Touch Series Pumps

chek-mate Medium Flow Calibrator

See pages 6 and 7.

### References

<sup>1</sup> Harper, M., et al., "Calibration of the SKC, Inc. Aluminum Cyclone ...," *Jnl. of Aer. Sci.*, Vol. 29, (Suppl. 1), 1998, pp. S347-S348, <https://doi.org/10.2514/6.1998-1281>




<sup>2</sup> Gautam, M. and Sreenath, A., "Performance of a Respirable Multi-inlet Cyclone," *Jnl. of Aer. Sci.*, Vol. 28, No. 7, 1997, pp. 1265-1281 (<https://doi.org/10.2514/6.1997-1281>)

# SM-7204 Personal Silica Monitor

## Compliance Monitor for NIOSH Method 7708

- Adjustable pump compensates flow for changes in back pressure, temperature, and atmospheric pressure
- Accepts preloaded 37-mm or 25-mm filter cassettes
- Compatible with ISO validated sampling inlets
- Sensor/filter cassette clips directly in the breathing zone
- Easy-to-clean optical sensor
- Displays real-time graphing and measurements in  $\mu\text{g}/\text{m}^3$  or  $\text{mg}/\text{m}^3$
- On-screen programming of libraries for aerosol profiles and data set naming
- Comes standard with GS-3 Cyclone (conforms to ISO 7708/CEN criteria)
- Infield PM calibration and verification
- Concurrent filter sampling option for lab analysis and/or cross-calibration of displayed results
  - Gravimetric filter cassette located directly behind the sensor for maximum particle deposition
- Datalogging
  - DustComm Software for downloading, trend analysis, and graphical analysis/comprehensive reporting

The new SM-7204 is optimized for measuring silica levels specified in the OSHA Final Silica Rule and calibrated to a known amount of silica dust. Use direct readings for determination of peak silica concentrations for mitigation and lower TWAs. SM-7204 alerts users to approaching thresholds for immediate corrective action. Quickly implement controls and measure effectiveness to reduce further silica exposures. SM-7204 features a built-in compensating pump and gravimetric filter cassette directly behind the sensor to provide for concurrent gravimetric sampling for silica analysis and cross-calibration.

Description	Cat. No.	Qty.
<b>SM-7204 Silica Monitor Kit</b> includes monitor, opaque filter cassette holder, open-faced sampling adapter, GS-3 respirable cyclone, detachable thoracic sampling inlet, micro USB download cable, cable, battery charger, zeroing filter, HAZ-DUST media USB with instruction manual and DustComm Pro Software, and carry case  <b>110-240 V</b>	<b>770-700A</b>	<b>ea</b>
<b>SM-7204 Monitor with PPI Sensor</b> , includes monitor, PPI/Sensor, flow adapter, zero accessory, battery charger, and DustComm Pro Software  <b>110-240 V</b> 	<b>770-700P</b>	<b>ea</b>

 Requires calibration with equipment sold separately; see Accessories.

Accessories and Replacement Parts		
<b>Infield Calibration Verification</b>	<b>770-710A</b>	<b>ea</b>
<b>Calibration Jar</b> , for calibrating and setting pump flow when using a respirable cyclone	<b>225-112</b>	<b>ea</b>
<b>Replacement Zeroing Filter</b>	<b>770-324A</b>	<b>ea</b>
<b>Replacement Battery Pack</b> , Li-Ion	<b>770-7205</b>	<b>ea</b>
<b>PPI Sensor with Factory Calibration for Preexisting 7204 Models</b> , preexisting unit must be returned for factory calibration when purchasing this item	<b>770-7215</b>	<b>ea</b>



SM-7204 is uniquely optimized for silica exposure measurement at the new PEL.

### APPLICATIONS

- Monitoring regulated areas with user-set alarms
- Evaluation of controls/worker activities
- Recording time history of dust levels
- Filter sampling for lab analysis
- Task monitoring
- Selecting PPE

### PERFORMANCE PROFILE

**Sensor:** Light scattering

**Flow Rate:** 1 to 5 L/min, user selectable

**Sensing Range:** 0.001 to 500  $\text{mg}/\text{m}^3$   
(1 to 500,000  $\mu\text{g}/\text{m}^3$ )

**Measuring Range:** Particle sizes from 0.1 to 100  $\mu\text{m}$

**Precision:**  $\pm 0.002 \text{ mg}/\text{m}^3$  or 2  $\mu\text{g}/\text{m}^3$

**Accuracy:**  $\pm 10\%$  to filter gravimetric SAE fine test dust

**Calibration:** ISO 12103-1 A2 fine test dust component with total silica, crystalline analysis of dust by X-ray diffraction - NIOSH 7500 and dust analyses gravimetric - NIOSH 7500.

**Display:** Concentration in  $\text{mg}/\text{m}^3$  or  $\mu\text{g}/\text{m}^3$ , sampling size fraction of PM (OSHA TWA, AVG, MAX, MIN), start and stop time, elapsed run time, log rate, flow, real-time rolling graphs, personalized named data sets, unique aerosol profiles, language options, battery life, pump faults, infield calibration test, history of data sets

**Gravimetric Filter Sampling Requirement:** 37-mm PVC filter for supplied 37-mm in-line cassette (25-mm filter and cassette options are available)

Visit [www.skccinc.com/products/sm-7204-personal-silica-monitor](http://www.skccinc.com/products/sm-7204-personal-silica-monitor) for more information.



## Parallel Particle Impactors (PPIs)

Listed in the OSHA Silica Rule



- Collection efficiency precisely matches ISO 7708/CEN criteria adopted in the OSHA Final Silica Rule and NIOSH respirable dust methods
- Available in three flow rates for your applications
  - 2 and 4 L/min models for TWA sampling
  - 8 L/min model for shorter-term sampling
- Disposable anti-static plastic, designed for one-time use
- Disposable PPI® Sampler Options
  - Preloaded with filter and pre-oiled impaction substrates by SKC
  - Preloaded, preweighed filter and pre-oiled impaction substrates by SKC
  - Empty except for pre-oiled impaction substrates, ready for lab or user to load filter
- Performance published in *Journal of Physics* and referenced in OSHA Final Silica Rule
- PPI Samplers are available in reusable aluminum; see more at [www.skccinc.com/ppi](http://www.skccinc.com/ppi)

## PERFORMANCE PROFILE

**Flow Rate:** 2, 4, or 8 L/min; model dependent; meet ISO/CEN criteria in OSHA Final Silica Rule†

**Sampling Media:** 37-mm PVC filter/support

**Recommended Sampling Pumps/Calibrators:**

**AirChek Touch Series Pumps:**

For 2 and 4 L/min; see more on pages 6 and 7

**Leland Legacy Pump:**

For 8 L/min; see more at [www.skccinc.com/categories/air-sampling-pumps-to-30-l-min](http://www.skccinc.com/categories/air-sampling-pumps-to-30-l-min)

**chek-mate Calibrators:**

Medium Flow or High Flow (depending on applicable flow rate); see more at [www.skccinc.com/chek-mate](http://www.skccinc.com/chek-mate)

† PPI performance data from a peer-reviewed journal article and part of the OSHA docket used to develop the OSHA Final Silica Rule

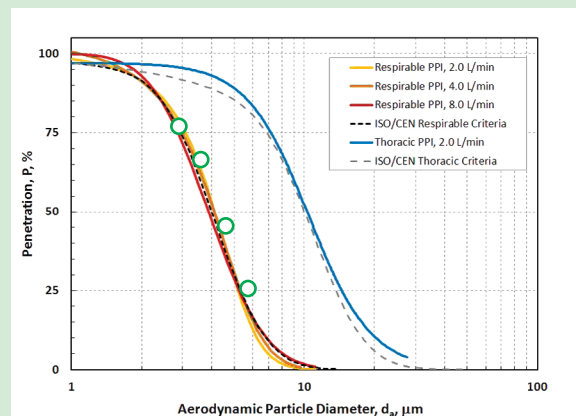
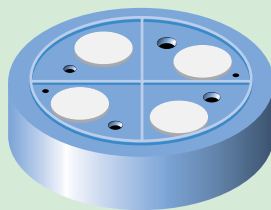
### References

Trakumas, S. and Salter, E., "Parallel Particle Impactor – Novel Size-selective Particle Sampler for Accurate Fractioning of Inhalable Particles," *Journal of Physics: Conference Series*, 151 012060, <http://doi.org/10.1088/1742-6596/151/1/012060>

SKC Sampling Solutions for Respirable Crystalline Silica, [www.skccinc.com/knowledgecenter](http://www.skccinc.com/knowledgecenter), search "1881"

## A Closer Match to the Entire ISO 7708/CEN Curve with PPI

With its four-impactors-in-parallel design, the PPI Sampler provides a closer match to the entire ISO 7708/CEN curve.





# Parallel Particle Impactors (PPIs)

Disposable — Convenient for Professionals and Labs

## Preloaded Disposable Plastic PPI Samplers

Description	Cat. No.	Qty.
<b>Preloaded Disposable PPI Samplers*</b> contain four porous plastic disc impaction substrates, one 37-mm cellulose support, and one collection filter as noted		
<b>Respirable PPI (red)</b> , 8 L/min, plastic, with 5.0- $\mu$ m PVC filter	225-3841	ea
<b>Respirable PPI (orange)</b> , 4 L/min, plastic, with 5.0- $\mu$ m PVC filter	225-3871	ea
<b>Respirable PPI (gold)</b> , 2 L/min, plastic, with 5.0- $\mu$ m PVC filter	225-3851	ea
<b>Respirable PPI (gold)</b> , 2 L/min, plastic with 1.0- $\mu$ m PTFE filter, no support	225-3852	ea
<b>With Prewieghed Filter</b>		
<b>Respirable PPI (red)</b> , 8 L/min, plastic, 5.0- $\mu$ m PVC filter preweighed to 5 decimals; unit supplied in tamper-evident inner bag	225-3841-PW	ea
<b>Respirable PPI (orange)</b> , 4 L/min, plastic, 5.0- $\mu$ m PVC filter preweighed to 5 decimals unit supplied in tamper-evident inner bag	225-3871-PW	ea
<b>Respirable PPI (gold)</b> , 2 L/min, plastic, 5.0- $\mu$ m PVC filter preweighed to 5 decimals; unit supplied in tamper-evident inner bag	225-3851-PW	ea

\*Designed for one-time use

## User-loaded Disposable Plastic PPI Samplers

Description	Cat. No.	Qty.
<b>User-loaded Disposable PPI Samplers*</b> contain four porous plastic disc impaction substrates, <i>require collection filter and support; see information below and select based on application</i>		
<b>Respirable PPI (red)</b> , 8 L/min, plastic	225-384	ea
<b>Respirable PPI (orange)</b> , 4 L/min, plastic	225-387	ea
<b>Respirable PPI (gold)</b> , 2 L/min, plastic	225-385 225-385A	ea 25

\*Designed for one-time use

Filters for User-loaded PPI Samplers	Cat. No.	Qty.
<b>PVC Filters</b> , 37 mm, 5.0- $\mu$ m pore size	225-5-37	100
<b>MCE Filters</b> , 37 mm, 0.8- $\mu$ m pore size	225-1939	100

Filter Supports for User-loaded PPI Samplers	Cat. No.	Qty.
<b>Support Pads</b> , cellulose, 37 mm	225-27	100
<b>Stainless Steel Screen</b> , 37 mm, wide mesh	225-26	ea

Accessory	Cat. No.	Qty.
<b>Calibration Adapter</b> , for Disposable PPI Samplers only	225-389	ea

Visit [www.skccinc.com/ppi](http://www.skccinc.com/ppi) for more information.



## PPI Advantages

- **Handy calibration adapter** — no calibration jar needed!



- **No tipping hazard!**  
Invert PPI without causing large particles to invalidate the filter sample.







# SKC AirChek Sample Pumps

Touch Technology Enhanced, Constant Flows 5 to 5000 ml/min

- **Flows from 5 to 5000 ml/min**
  - 5 to 500 ml/min with low flow holder
  - Multi-tube sampling in low flow mode
- **High back pressure compensation**
  - Up to 50 inches water at 2 L/min
- **Long run times on Li-Ion battery**
- **Correct flow for changes in temperature and atmospheric pressure**
- **Flow fault with auto-restart**
- **Intuitive touch operation**
- **Bright running and status LEDs**
- **Tough no-slip case**
- **Ultra-quiet – average 51.7 dB**  
(37-mm, 0.8 µm MCE filter at 2 L/min)
- **Small and lightweight**
  - 4.1 x 3.7 x 2.8 inches (10.4 x 9.4 x 7.1 cm)
  - 19.4 ounces (550 grams)
- **Screen protection and security**
  - Protective screen cover
  - Screen lock-out feature
- **Intrinsically safe**
- **Designed to meet ISO 13137**

Choose SKC AirChek® Touch Series sample pumps for your applications. AirChek Essential+ offers the simplest operation and best value with enhanced touch screen and lowest price. Feature-rich AirChek TOUCH provides full programmability from PC or full-color touch screen and automatic calibration. AirChek Connect features Bluetooth connectivity to mobile devices and PC for easy remote monitoring. AirChek Touch Series sample pumps are built to serve you and the workers you protect.

AirChek **ESSENTIAL+** AirChek **TOUCH** AirChek **CONNECT**

AirChek	Low Price Simple Operation	Fully Programmable Easy Navigation	Bluetooth-connectivity Mobile App
<b>Operation</b>	Touch screen	Color touch screen	Touch screen
<b>Display</b>	High-contrast backlit B&W LCD, elapsed run time, battery status	Color LCD, time, date, battery status, real-time flow rate, sample volume, ambient temperature, atm. pressure, fault, accumulated volume, elapsed time, pump run and stop status	High contrast backlit B&W LCD, time, date, battery status, flow rate, fault, sample volume, temp, atm. pressure, back pressure, programmed run remaining time, and elapsed run time
<b>Programmable – Continuous, Timed, and Intermittent Sampling (presets available)</b>		●	●
<b>PC Compatible with DataTrac Pro Software – Download Sampling History</b>		● †	●
<b>Bluetooth Connectivity with PC and Mobile</b>			● ‡
<b>Mobile App</b>			●
<b>Constant Pressure Mode</b>			●
<b>CalChek Hands-free Calibration Feature with chek-mate Calibrator</b>		●	
<b>Charging</b>	Standard cradle, chainable	Standard or e-cradle, chainable	Standard cradle, chainable
<b>Certifications</b>	<b>Intrinsic safety:</b> UL913, CAN/CSA C22.2, ATEX, IECEx, UKEX <b>Other:</b> CE, UKCA	<b>Intrinsic safety:</b> UL913, CAN/CSA C22.2 <b>Other:</b> CE, UKCA	<b>Intrinsic safety:</b> UL913, CAN/CSA C22.2, ATEX, IECEx, UKEX <b>Other:</b> CE, UKCA
<b>More Information</b>	<a href="http://www.skinc.com/pages/skc-airchek-touch-series-sampling-pumps">www.skinc.com/pages/skc-airchek-touch-series-sampling-pumps</a>		

† Connectivity to PC requires 877-93 (see p. 7)

‡ Requires 877-94 to use Bluetooth with PC (see p. 7)



## AirChek ESSENTIAL+

Low Price, Simple Operation, 5 to 5000 ml/min

### Ordering

#### AirChek Essential+ Pump\*

Pump only, requires charging cradle and power supply (Cat. Nos. 220-800 and 220-600).

100-240 V 220-3100

Cat. No.

Contact your SKC representative for information on AirChek Essential+ Kits.



\* AirChek Essential+ pumps contain Li-Ion batteries and are subject to special shipping regulations.

## AirChek TOUCH

Fully Programmable, Easy Navigation, 5 to 5000 ml/min

### Ordering

#### AirChek TOUCH Pump Kits\*

**Starter Kit** includes pump as described above, Standard Charging Cradle, power supply with cord, 3 feet (0.9 meter) of Tygon tubing, and collar clip with cable tie, *connectivity to PC requires 877-93 below*

100-240 V 220-5000TC-S

**Single High Flow Pump Kit** includes pump as described above, Standard Charging Cradle, power supply with cord, and filter cassette holder, in a soft-sided nylon carry case, *connectivity to PC requires 877-93 below*

100-240 V 220-5000TC-K

**5-pack High Flow Pump Kit** includes 5 pumps as described above, 4 Standard Charging Cradles, 1 e-Cradle, power supply with cord, USB cable for use with free DataTrac Pro software download, and 5 filter cassette holders, in a hard-sided case

100-240 V 220-5000TC-K5



\* AirChek TOUCH pumps contain Li-Ion batteries and are subject to special shipping regulations.

## AirChek CONNECT

Bluetooth Connectivity, Mobile App, 5 to 5000 ml/min

### Ordering

#### AirChek Connect Pump Kits\*

**Starter Kit** includes pump as described above, Standard Charging Cradle, power supply with cord, 3 feet (0.9 meter) of Tygon tubing, and collar clip with cable tie, *requires 877-94 below to use Bluetooth with PC*

100-240 V 220-4000-S

**Single High Flow Pump Kit** includes pump as described above, Standard Charging Cradle, power supply with cord, and filter cassette holder, in a soft-sided nylon carry case, *requires 877-94 below to use Bluetooth with PC*

100-240 V 220-4000-K

**5-pack High Flow Pump Kit** includes 5 pumps as described above and 5 each: Standard Charging Cradles and power supply with cord, and filter cassette holders; and 1 DataTrac Pro USB Bluetooth Adapter (software available via free download), in a hard-sided case

100-240 V 220-4000-K5



\* AirChek Connect pumps contain Li-Ion batteries and are subject to special shipping regulations.

#### Accessories

**Standard Charging Cradle**, for AirChek Connect, TOUCH, and Essential+ pumps, *requires power supply, see below*

Cat. No.

220-800

**Multi Cradle Power Supply**, for use with 2 to 5 charging cradles

100-240 V 220-700

**Medium Flow chek-mate Calibrator**, 0.5 to 5 L/min, includes 9-volt battery and NIST standard traceable calibration certificate; also available with UK or ISO standard traceable calibration certificate. *Learn more at [www.skcinco.com/chek-mate](http://www.skcinco.com/chek-mate)*

375-0550N

**DataTrac Pro for AirChek TOUCH**, includes e-Cradle, single power supply, and USB cable for connection to PC, *required for free software download and use of DataTrac Pro for AirChek TOUCH Software.*

877-93

**DataTrac Pro for AirChek Connect**, includes USB Bluetooth Adapter to be installed on USB port on PC, *required for free software download and use of DataTrac Pro Software for AirChek Connect.*

877-94



# EXPERTISE

SKC Science Serving People through Training and Resources

## Expertise is the foundation and heart of SKC solutions

SKC is dedicated to sharing its expertise to serve industrial hygiene and other OEHS professionals. Our goal is to help you protect the health and safety of people at work and in their communities.



Visit the SKC

**KNOWLEDGE**CENTER

at [www.skcinc.com](http://www.skcinc.com)

- **TECHNICAL** INFORMATION
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